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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/912,223  | 07/24/2001  | Ting He              | 3994994-131915-2    | 8129             |
| 23570   | 7590        | 05/28/2004           | EXAMINER            |                  |
| PORTER WRIGHT MORRIS & ARTHUR, LLP<br>INTELLECTUAL PROPERTY GROUP<br>41 SOUTH HIGH STREET<br>28TH FLOOR<br>COLUMBUS, OH 43215 |             |                      | NGUYEN, CAM N       |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 1754                |                  |
| DATE MAILED: 05/28/2004   |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                 |                         |  |
|------------------------------|---------------------------------|-------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b>          | <b>Applicant(s)</b>     |  |
|                              | 09/912,223                      | HE, TING                |  |
|                              | <b>Examiner</b><br>Cam N Nguyen | <b>Art Unit</b><br>1754 |  |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on July 24, 2001 (a CIP of application 09/742,697)  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-23 is/are pending in the application.  
 4a) Of the above claim(s) 1 and 2 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 3-23 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 24 July 2001 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____.   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

### DETAILED ACTION

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-2, drawn to a catalytic surface, classified in class 502, subclass 300+.
  - II. Claims 3-23, drawn to a method for depositing a catalyst coating of metal oxide and noble metal particles onto the surface of a substrate, classified in class 427, subclass 446+.

The inventions are distinct, each from the other because:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process, such as by the pyrolysis technique or impregnation technique.
3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, and have acquired a separate status in the art as shown by their different classification, and because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with **Mr. Edwin M. Baranowski** on **May 24, 2004** a provisional election was made with traverse to prosecute the invention of Group II, claims 3-23. Affirmation of this election must be made by applicant in replying to this

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Office action. Claims 1-2 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Objections***

5. Claims 3-23 are objected to because of the following informalities:

In claims 6-23, line 1, "in which" should be changed to --wherein--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102(b)***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 3-5, 9-12, 15-20, & 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsou (US Pat. 5,645,930).

Tsou discloses a method of depositing a catalyst coating of the platinum group metal and the metal oxide powder mixture to a metal substrate by thermal spraying method using a plasma spray or arc-spray apparatus (see col. 7, ln 61-63). The coating is applied as a mixture of electrocatalytically active metal and metal oxide powders to the substrate (see col. 7, ln 64- col. 8, ln 1-3). Useful platinum group metals and precursor compounds including salts, such as halides, sulfates, nitrates, nitrites, phosphates of platinum, ruthenium, osmium, palladium, rhodium, and iridium (see col. 8, ln 20-30). See also col. 22, claims 1-4. The metal oxide particulate material is

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selected group the group of metals including manganese, nickel, copper, cobalt, silver, and alloys thereof (see col. 22, claim 2 & claim 4). Particles of ruthenium dioxide are present in the coating solution as a dispersion, and the dispersed ruthenium dioxide particles have a typical particle size of about 1 to about 20 microns (see col. 14, ln 23-26).

The claimed particle sizes are met by the teaching of the reference since they fall within the disclosed particle size range (see above).

Tsou discloses the claimed method, thus anticipates the claims.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 6 & 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsou (US Pat. 5,645,930) as applied to claims 3-5, 9-12, 15-20, & 23 above, and further in view of Subramanian (US Pat. 6,387,539 B1).

Tsou discloses a method of depositing a coating catalyst as described above, except for cerium, praseodymium, and terbium.

However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have utilized such metals to achieve more stable catalyst coatings in Tsou, because cerium, praseodymium, and terbium are known as

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useful thermal barrier coating materials applied on a substrate, providing high phase stability at 1400°C and higher, which are resistant to sintering damage, for coating superalloy or ceramic components in the hot sections of a combustion turbine, such as turbine blades and vanes, transitions, ring segments and combustors, as taught by Subramanian (see Subramanian at col. 8, claim 1 & col. 1, ln 13-22).

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsou (US Pat. 5,645,930) as applied to claims 3-5, 9-12, 15-20, & 23 above, and further in view of Cordy (US Pat. 6,129,996).

Tsou discloses a method of depositing a coating catalyst as described above, except for tin.

However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have utilized tin to achieve an improved catalyst coating in Tsou because Cordy fairly suggests that the coexistence of primarily tin along with cobalt and bismuth in the matrix structure of the surface coating layer provides a low coefficient of friction as well as improved hardness, so that high abrasion resistance is obtained (see Cordy at col. 4, ln 66- col. 5, ln 5). See also Cordy at col. 4, ln 50-56.

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsou (US Pat. 5,645,930) as applied to claims 3-5, 9-12, 15-20, & 23 above, and further in view of Beaver et al., "hereinafter Beaver", (US Pat. 4,871,703).

Tsou discloses a method of depositing a coating catalyst as described above, except for gold.

However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have utilized gold to achieve an improved catalyst coating in Tsou because gold is known in the art as useful metal for coating, as shown by Beaver (see Beaver at col. 7, ln 13).

12. Claims 7 & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsou (US Pat. 5,645,930) as applied to claims 3-5, 9-12, 15-20, & 23 above, and further in view of Silversand (US Pat. 5,980,843).

Tsou discloses a method of depositing a coating catalyst as described above, except for the following differences.

Regarding claim 7, Tsou does not disclose aluminum. However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have utilized aluminum to achieve a catalyst coating with desired metal in Tsou because it is known in Silversand to use aluminum as coating material onto a substrate in a similar process (see Silversand at col. 13, claim 4).

Regarding claim 22, Tsou does not disclose using flame spraying technique to conduct his coating process. However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have utilized the flame spraying technique in Tsou's process because it is known in Silversand to use the same technique for the same coating process (see Silversand at col. 13, claim 3).

***Citations***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 Form attached. All references as cited are for related art.

***Conclusion***

14. Claims 1-23 are originally pending in the application. Claims 1-2 are withdrawn due to nonelected (distinct) invention. Claims 3-23 are rejected. No claims are allowed.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Cam Nguyen, whose telephone number is (571) 272-1357. The examiner can normally be reached on M-F from 9:30 am. to 6:00 pm.

The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to telephone number (571) 272-1700.

  
\_\_\_\_\_  
Cam Nguyen

Nguyen/cnn CNN

Primary Examiner

May 26, 2004

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